

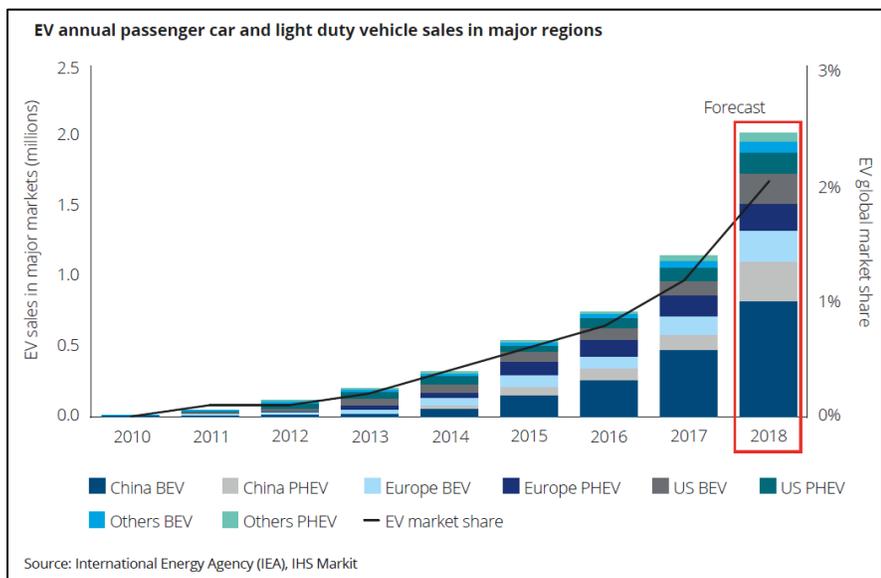


Electric Vehicles Continue to Take Off

From the perspective of vehicle original equipment manufacturers (OEMs), electric vehicles (EVs) continue to be incredibly attractive. Existing vehicle OEMs ([Tesla](#), [Nissan](#), etc.) continue to add more EVs to their product line, while selling more units of their current EV models in the meantime. Additionally, new vehicle OEMs continue to “enter the game” by building EVs that either fill a previously empty niche (such as [Rivian](#), [Bollinger Motors](#), and [Lordstown Motors](#) – all are building EV pickups, vans, and/or SUVs), or by building vehicles that are optimized for battery electric operation ([Uniti](#)). Some highlights from this month include:

- Tesla [beat expectations in CQ2 2020](#) by delivering 90,650 vehicles – nearly as many as they delivered in Q2 2019 (95,200). Given COVID-19 this year, and the record shipment of Tesla Model 3s due to its introduction last year, this is nothing short of exciting. Tesla Model 3 led the way in Q2 2020, with over 80,000 units shipped.
- [Uniti](#) has [announced the pricing](#) of their Uniti 1 two-seat car, with a target price of \$19,600. The company was started through a crowdfunding effort that generated over \$1M, and is purported to have a 200 mile range.
- [Exterior photos](#) of Volkswagen’s ID.4 electric crossover have been released. VW’s first all-electric SUV has a [price target of \\$35,000 to \\$45,000](#), and is expected to go on sale in late 2020 or early 2021.
- [Fisker](#) [raised \\$50M](#) this month, most of which will go to funding engineering efforts on Fisker’s all-electric Ocean SUV, which the company plans to launch in 2022.
- [Hyllion](#) has [entered the EV heavy truck market](#). The company will be offering two drive trains to heavy truck vehicle OEMs: an diesel hybrid drive, and an all-electric drive system.

We will continue to cover EV market penetration in our upcoming newsletters.

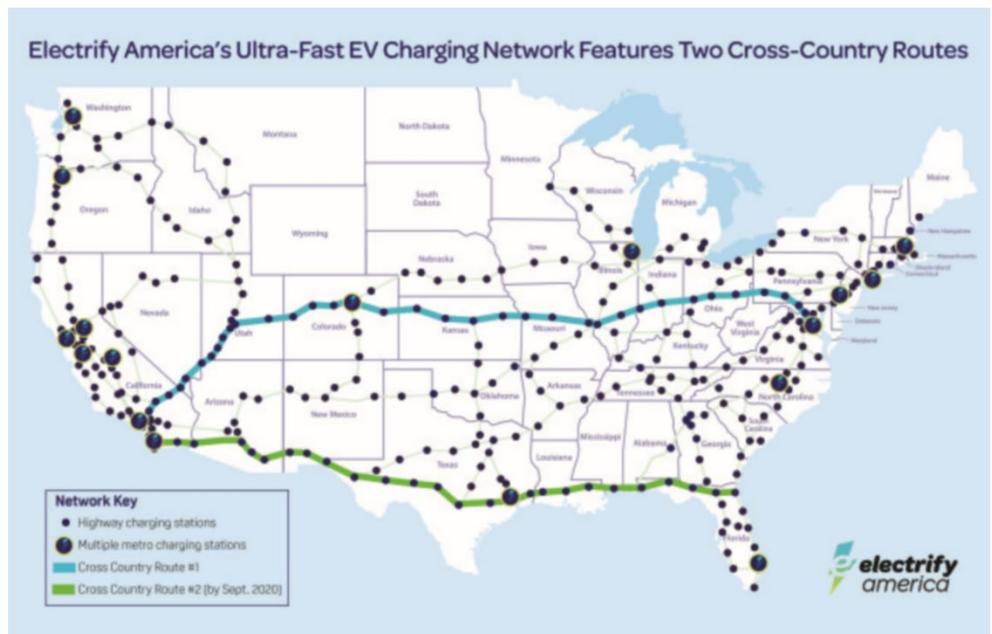


Electrify America US Cross-Country EV Charging Routes Completed

Roughly 100 years ago, the dream of car owners was to be able to drive across the United States, with gasoline refilling stations along the route. This dream gave birth to the network of [over 114,000 gas stations \(as of 2012\)](#) that we have on US road networks. A century later, the same dream exists with electric vehicles – the desire to drive across the United States while charging cars from public charging stations.

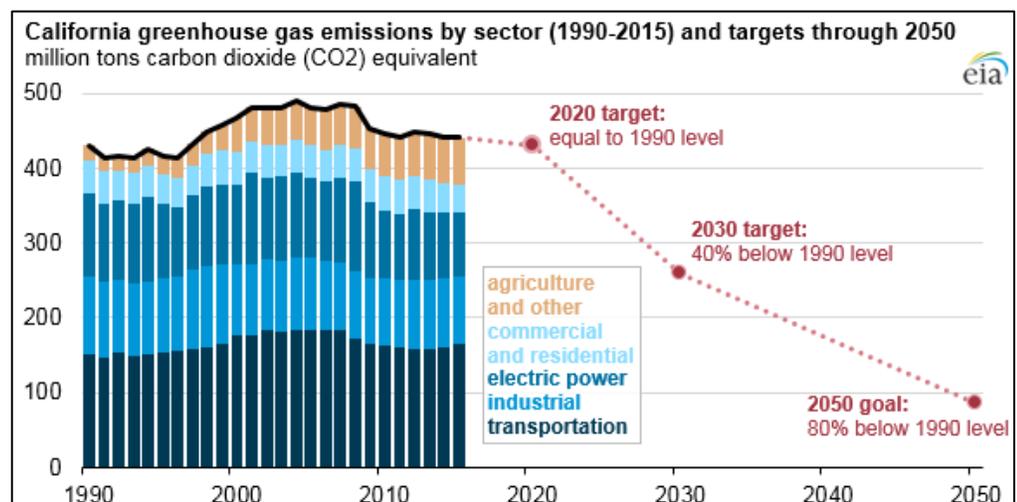
Last month, [Electrify America established two coast-to-coast EV charging routes](#) in the US: one from San Diego to Jacksonville, and the second from Los Angeles to Washington DC.

On these routes, charging stations are 70 miles apart on average, making it easy for EV owner to drive cross-country. These routes compliment multiple north-south routes on both the East Coast and West Coast of the US. While the Tesla Supercharger network has already had cross-country coverage (due in part to the extended range of Tesla EVs, which means charging stations can be farther apart), the Electrify America routes are the first ones that utilize non-proprietary chargers. And while there are still clearly large swaths of the country that do not have Electrify America charging stations, the options for charging are clearly increasing.



California Doubles Down on Electrification, Passing Rules for All-Electric Buildings and Clean Electric Trucks

In a move to further extend California's environmental leadership in the United States, the California Air Resources Board (CARB) Virginia [recently voted unanimously](#) to require all trucks sold in the Golden State to be zero emission by 2045, and [60% of medium and heavy trucks](#) to be zero emission by 2035. This is in addition to a proposed revision to Title 24 of the California building code which would [ban natural-gas equipment installation for new buildings](#) starting in 2022, essentially making new buildings all-electric.



These moves follow various laws passed by municipalities ending the use of natural gas in both homes and in buildings. The new rules are being met with mixed reaction by utilities, with all-electric SoCal Edison and PG&E (yes, “gas and electric”) supporting the move, while gas-only utilities are (unsurprisingly) opposed to the new rules. Similarly, truck operators and EV manufacturers are supporting the new CARB rules, while some vehicle manufacturers a little more wary. But the impact on the vehicle market was pretty quick: Tesla stock jumped more than \$1,000 per share.

Vehicle-To-Grid (V2G) Part Three – Delivery Trucks and Vans

With COVID-19, stay-at-home orders, and the shutdown of in-person shopping at many venues, one of the sights that has become more ubiquitous is the delivery truck or delivery van. The [first quarter of 2020 saw an COVID-19 impact](#) the availability of products and goods because of supply chain issues (and hence the need to ship products and goods to consumers). However, the second quarter saw a rebound as the supply chains started to recover. Whether from [Amazon](#), [UPS](#), [FedEx](#), the [USPS](#), or another carrier, delivery trucks and vans are now not limited to just the holidays.



And more of these carriers are looking to vehicle electrification to reduce their energy costs.

For electrified short-haul (i.e., metropolitan) delivery trucks and vans, vehicle-to-grid (V2G) charging can make a lot of sense. These vehicles typically operate between 8am and 5pm, and typically do not drive long distances during their operational hours, and have battery capacities of over 100kWh. This means that if a local fleet of 100 vehicles are completing their shifts with 10% of their power remaining, they could put 10MWh of power back onto the grid.

Depending on how much of a surcharge is paid for energy during peak hours, this could reduce energy costs between 5% and 20%. Clearly, the more power that the vehicles can put back onto the grid, the greater the savings are likely to be. And like school buses, vehicles not being used during the weekend can put all of their capacity back onto the grid. Of course, this also requires the fleet operator to have access to V2G-certified bi-directional EV chargers (preferably where they park their vehicles). You can find out more about what it takes for a charger to be V2G certified on one of our recent [blogs](#).

If you are a fleet operator looking to electrify your vehicles, the best consideration is likely either buying your own chargers or leasing chargers which are installed where your vehicles are parked when they are not operating. But most of all, high reliability is the most critical factor that fleets should utilize when selecting chargers for their fleet. Our white paper “Designing Charging Infrastructure to Maximize Electric Vehicle Fleet and Charging Network Reliability and Availability” can provide more ideas to consider – [let us know](#) and we will send you a copy.

Quick Notes from the Electric Vehicle (EV) Ecosystem

Some interesting links to stories in the EV ecosystem during the month of June 2020:

- [Electric car maker Fisker eyes deal to go public](#)
- [Tesla leads UK's 150% increase in electric car sales](#)
- [Why shares of Tesla, Nio, and other electric-vehicle makers are skyrocketing](#)
- [Ford will offer EVs of its iconic models, so what about an electric Bronco?](#)
- [Volkswagen and Porsche push ahead with converting factories to make EVs](#)
- [US coalition pushed for a surge of electric vehicles beyond California](#)
- [Lordstown Motors reveals electric Endurance pickup with revolutionary in-wheel motors](#)
- [California passes nation's first zero-emission, electric truck goal](#)
- [Electric pickups are on the way, promising everything from bulletproofing to drinking fountains. Here are some of the wildest features to expect from Tesla, Rivian, and others.](#)
- [The future of EV charging may be at 50kW, not the 'gasoline thinking' of 250kW](#)

About Rhombus Energy Solutions

Rhombus develops and manufactures next-generation bi-directional electric vehicle charging infrastructure, high-efficiency power conversion systems, and energy management system (EMS) software for vehicle-to-grid (V2G) capable electric vehicle fleet charging, energy storage, and microgrid applications. The high reliability of our solutions is the result of decades of experience developing high-power systems for a variety of applications and deployment scenarios, including UL-1741SA system-to-grid solutions. For more information, please visit www.rhombusenergy.com.

